Attorney's Docket No. 9209-12   <u>PATENT</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re: Scanzano et al.   Confirmation No.: 9756
Serial No.: 09/942,787   Group Art Unit: 2161
Filed: August 29, 2001   Examiner: Te Y. Chen
For: DATABASE SYSTEMS, METHODS AND COMPUTER PROGRAM PRODUCTS
USING TYPE BASED SELECTIVE FOREIGN KEY ASSOCIATION TO REPRESENT
MULTIPLE BUT EXCLUSIVE RELATIONSHIPS IN RELATIONAL DATABASES
                                         Date: October 31, 2005

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P.O. Box 1450
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TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION--37 C.F.R. § 1.192)

1.   Transmitted herewith is the APPEAL BRIEF for the above-identified application, pursuant to the Notice of Appeal filed on **August 30, 2005**.

2.   This application is filed on behalf of
      ☐   a small entity.

3.   Pursuant to 37 C.F.R. § 1.17(c), the fee for filing the Appeal Brief is:
      ☐   small entity $250.00
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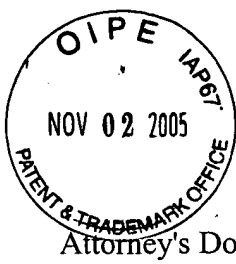   ☒   Any additional fee or refund may be charged to Deposit Account
           50-0220.

                              Respectfully submitted,

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APPELLANTS' BRIEF ON APPEAL UNDER 37 C.F.R. §41.37

Sir:

This Appeal Brief is filed pursuant to the "Notice of Appeal to the Board of Patent Appeals and Interferences" filed August 30, 2005.

Real Party In Interest

The real party in interest is assignee Trendium, Inc., Fort Lauderdale, Florida.

Related Appeals and Interferences

Appellants are aware of no appeals or interferences that would be affected by the present appeal.
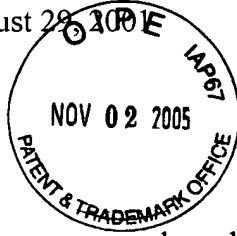
Status of Claims

Appellants appeal the final rejection of Claims 1 - 48, which as of the filing date of this Brief remain under consideration. The claims at issue as included in Appellants' response to the Office Action of December 28, 2004 are attached hereto as Appendix A.

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Status of Amendments

Three responses have been filed in the present case: An "Amendment" was filed February 25, 2004 in response to an Office Action mailed November 28, 2003. An "Amendment After Final" was filed June 18, 2004 in response to a final Office Action mailed April 21, 2004. A Request for Continued Examination (RCE) was filed October 7, 2004 to allow entry of the "Amendment After Final" of June 18, 2004. An "Amendment" was filed March 15, 2005 in response to an Office Action mailed December 28, 2004 (hereinafter "Office Action"). The rejections were maintained in a Final Office Action mailed May 31, 2005 (hereinafter "Final Action"). No claims have been canceled in prosecuting the present application; therefore, Claims 1 - 48 remain for consideration on the present appeal.

Summary of Claimed Subject Matter

Appellants appeal the final rejection of Claims 1 - 48.

Independent Claim 1 is directed to a computer-implemented method of managing a relational database. A foreign key that is associated with a record in a relating table is selectively associated with a specific one of a plurality of related tables based on at least one attribute of the record in the relating table by selectively creating a corresponding association in the relational database so as to provide multiple but exclusive relationships between tables in the relational database. (Specification, page 10, line 15 – page 11, line 8; FIGS. 4A and 5A).

Independent Claim 12 is directed to a database system for providing multiple but exclusive relationships between tables in a relational database. The database system comprises a relating table (Table A; FIG. 5A), a plurality of related tables (Tables B*; FIG. 5A), and means for selectively associating a foreign key value of a record in the relating table with a specific one of the plurality of related tables based on at least one attribute of the record containing the foreign key in the relating table so as to provide multiple but exclusive relationships between tables in the relational database. (Specification, page 10, line 15 – page 11, line 8; FIGS. 4A and 5A). The database management system 120 of FIG. 3 provides structure for the means for selectively associating.

Independent Claim 24 is directed to a computer program product for providing multiple but exclusive relationships between tables in a relational database. The computer program product comprises a computer readable medium having computer readable program code embodied therein. (Specification, page 7, line 27 – page 8, line 23). The computer readable program code comprises computer readable program code configured to selectively associate a foreign key associated with a record in a relating table with a specific one of a plurality of related tables based on at least one attribute of a record in the relating table so as to provide multiple but exclusive relationships between tables in the relational database. (Specification, page 10, line 15 – page 11, line 8; FIGS. 4A and 5A).

Independent Claim 36 is directed to a computer-implemented method of enforcing a multiple but exclusive relationship between a first table (Table A; FIG. 6A) and a plurality of second tables (Tables B*; FIG. 6A) in a database. A type attribute is associated, in the database, with records in the first table such that the type attribute of a record in the first table identifies which ones of the plurality of second tables the record is associated with. (Specification, page 11, lines 9 – 26). The multiple but exclusive relationship between records in the second tables and the first table is enforced, in the database, based on the type attribute associated with a record in the first table. (Specification, page 11, line 27 – page 12, line 8).

Independent Claim 40 is directed to a system for enforcing a multiple but exclusive relationship between a first table (Table A; FIG. 6A) and a plurality of second tables (Tables B*; FIG. 6A). The system comprises means for associating a type attribute with records in the first table such that the type attribute of a record in the first table identifies which of the plurality of second tables the record is associated with (Specification, page 11, lines 9 – 26), and means for enforcing the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table. (Specification, page 11, line 27 – page 12, line 8). The database management system 120 of FIG. 3 provides structure for the means for associating and the means for enforcing.

Independent Claim 45 is directed to a computer program product for enforcing a multiple but exclusive relationship between a first table (Table A; FIG. 6A) and a plurality of second tables. (Tables B*; FIG. 6A). The computer program product comprises a computer readable storage medium having computer readable program code embodied therein. (Specification, page

7, line 27 – page 8, line 23). The computer readable program code comprises computer readable program code configured to associate a type attribute with records in the first table such that the type attribute of a record in the first table identifies which ones of the plurality of second tables the record is associated with (Specification, page 11, lines 9 – 26), and computer readable program code configured to enforce the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table. (Specification, page 11, line 27 – page 12, line 8).

Dependent Claim 15 depends from independent Claim 12 and further recites that the means for selectively associating comprises means for defining a database trigger to enforce relationships between the types of foreign key associations and the corresponding one of the plurality of related tables. (Specification, page 14, lines 10 – 17). The database management system 120 of FIG. 3 provides structure for the means for selectively associating and the means for defining.

Dependent Claim 16 depends from independent Claim 12 and further recites that the means for selectively associating comprises means for defining a type associated with respective ones of the plurality of related tables in a type table, means for accessing the type table to determine a type associated with a record in the relating table based on a value in the record in the relating table which identifies a record in the type table which identifies a type, and means for associating the type identified in the type table with the record in the relating table so as to select one of the plurality of related tables which contain records having foreign key associations which point the record in the relating table. (Specification, page 11, line 9 – page 12, line 8). The database management system 120 of FIG. 3 provides structure for the means for selectively associating, means for defining, means for accessing, and means for associating.

Dependent Claim 17 depends from independent Claim 12 and further recites that the relating table comprises a third table, the related tables comprise a plurality of second tables and the third table relates records in a first entity table to records in a corresponding one of the second tables. The means for selectively associating comprises means for defining a foreign key of records of the third table, means for defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables, means for selecting one of the second tables having a type corresponding to a type value associated with a

record of the third table, and means for identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the third table. (Specification, page 12, lines 9 – 31). The database management system 120 of FIG. 3 provides structure for the means for selectively associating, means for defining, a foreign key, means for defining a plurality of types, means for selecting, and means for identifying.

Dependent Claim 19 depends from independent Claim 12 and further recites that the means for selectively associating comprises means for defining a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables. (Specification, page 14, lines 10 – 17). The database management system 120 of FIG. 3 provides structure for the means for selectively associating and the means for defining a database trigger.

Dependent Claim 43 depends from independent Claim 40 and further recites that the means for enforcing the multiple but exclusive relationship comprises means for defining a database trigger which enforced the multiple but exclusive relationship. (Specification, page 14, lines 10 – 17). The database management system 120 of FIG. 3 provides structure for the means for enforcing and means for defining a database trigger.

Grounds of Rejection to be Reviewed on Appeal

Claims 36 – 48 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent Claims 1 - 48 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,933,831 to Jorgenson (hereinafter "Jorgenson").

Argument

I.   Claims 36 – 48 Meet the Requirements of 35 U.S.C. §112

Claims 36 – 48 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, the Final Action on page 2 states that it is unclear what

the type attribute, first table, and second tables refer to in Claims 36, 40, and 45. Appellants respectfully submit that the recitations of Claims 36, 40, and 45 are clear and fully supported in the Specification. For example, in some embodiments, the type attribute may be the typeID shown in Table A of FIG. 6A, the first table may be Table A of FIG. 6A, and the second tables may be Tables B. of FIG. 6A. Accordingly, Appellants respectfully submit that Claims 36 - 48 clearly satisfy the requirements of § 112, second paragraph, as described in MPEP § 2106 and request that the rejection of Claims 36 – 48 under 35 U.S.C. §112, second paragraph be reversed.

II.   Introduction to 35 U.S.C. §102 Analysis

Under 35 U.S.C. § 102, "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." M.P.E.P. § 2131 (quoting *Verdegaal Bros. v. Union Oil Co.*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987)). "Anticipation under 35 U.S.C. § 102 requires the disclosure in a single piece of prior art of each and every limitation of a claimed invention." *Apple Computer Inc. v. Articulate Sys. Inc.*, 57 U.S.P.Q.2d 1057, 1061 (Fed. Cir. 2000). "The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" M.P.E.P. § 2112 (citations omitted).

A finding of anticipation further requires that there must be no difference between the claimed invention and the disclosure of the cited reference as viewed by one of ordinary skill in the art. *See Scripps Clinic & Research Foundation v. Genentech Inc.*, 927 F.2d 1565, 1576, 18 U.S.P.Q.2d 1001, 1010 (Fed. Cir. 1991). In particular, the Court of Appeals for the Federal Circuit held that a finding of anticipation requires absolute identity for each and every element set forth in the claimed invention. *See Trintec Indus. Inc. v. Top-U.S.A. Corp.*, 63 U.S.P.Q.2d 1597 (Fed. Cir. 2002). Additionally, the cited prior art reference must be enabling, thereby placing the allegedly disclosed matter in the possession of the public. *In re Brown*, 329 F.2d 1006, 1011, 141 U.S.P.Q. 245, 249 (C.C.P.A. 1964). Thus, the prior art reference must

adequately describe the claimed invention so that a person of ordinary skill in the art could make and use the invention.

Appellants respectfully submit that the pending independent claims are patentable over the cited reference for at least the reason that the cited reference does not disclose or suggest each of the recitations of the independent claims. The patentability of the pending claims is discussed in detail hereinafter.

A.   Independent Claims 1, 12, and 24 are Patentable over Jorgenson

Independent Claims 1, 12, and 24 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jorgenson. (Final Action page 3). With respect to Claim 12, the Final Action cites to Figures 3A-3C of Jorgensen as disclosing "means for selectively associating a foreign key value of a record in the relating table with a specific one of the plurality of related tables based on at least one attribute of the record containing the foreign key in the relating table" and this citation has not changed. Final Action, p. 4. These Figures describe operations for displaying a hyperlinked entity relationship diagram. (Jorgensen, col. 2, lines 52-55). The operations of Figures 3A-3C do not provide the entity relationship in a database, but merely provide a display of that relationship. Therefore, Appellants submit that nothing in the cited portions of Jorgensen discloses or suggests the selective association of a foreign key in a relating table with a specific one of a plurality of related tables based on an attribute of the record containing the foreign key in the relating table as is recited in independent Claim 12. Similar recitations to those of Claim 12 are found in Claims 1 and 24.

In response to this argument, the Final Action asserts that the foreign key icon 324 of Figure 3B of Jorgensen teaches the selective association of a foreign key. However, Appellants submit that displaying a clickable foreign key icon is not selectively associating a foreign key with a table, it is merely displaying an icon that represents a foreign key and the icon may be selected. The Office Action asserts that the relating table is taught by the current table 314 of Figure 3B of Jorgensen. (Office Action, p. 6). However, block 314 recites selecting an entity from a current table **for display**. (Jorgensen, col. 4, lines 59-61; emphasis added). Jorgensen then describes determining if the entity contains a foreign key and displaying the foreign key icon if it does. (Jorgensen, col. 5, lines 11-16). The Office Action also cites to the pop-up list of

child tables 332 of Figure 3B of Jorgensen as disclosing that the foreign key of a relating table is associated with a specific one of a plurality of related tables. (Office Action, pp. 6-7). This portion of Jorgensen describes displaying an icon for a pop-up list of child tables if the selected entity is a parent. Jorgensen, col. 5, lines 26-35.

While Appellants are unsure of how these cited portions of Jorgensen that provide for displaying relationships in an existing database, not establishing those relationships, could possibly be interpreted as disclosing the recitations of any of the independent claims of the present application, Applicants submit that, even if the display of a relationship is somehow interpreted as establishing the relationship, Jorgensen still does not disclose the recitations of Claims 1, 12, and 24. In particular, Claims 1, 12 and 24 each recite "selectively associating a foreign key value of a record in the relating table with a specific one of the plurality of related tables based on at least one attribute of the record containing the foreign key in the relating table so as to provide multiple but exclusive relationships between tables in the relational database." Thus, foreign keys are selectively associated with corresponding related tables based on an attribute of the record containing the foreign key. Merely knowing the foreign key does not identify the related tables because the attribute must also be known to identify the specific one of the related tables that is associated with the foreign key.

In contrast, Jorgensen describes displaying the conventional foreign key relationship where the foreign key points to a parent table as described in the background of the present application. Thus, for example, Jorgensen describes displaying the clickable foreign key icon if there is a parent table for the entity of the current table. (Jorgensen Figure 3C, block 322). The determination of whether there is a parent table is described with reference to block 322 and states:

> If there is no primary key on the currently selected entity, the process proceeds instead directly to step 322, which depicts a determination of whether a parent table exists for the currently selected entity. The existence of a parent table for the currently selected entity may be established by the relational database. If a parent table exists for the currently selected entity, the process proceeds to step 324, which illustrates displaying a clickable foreign key icon for the entity in the table, and then to step 326. (Jorgensen, col. 6, lines 8-16).

There is no discussion whatsoever of how the determination that a parent table exists is carried out other than to state that it is established by the database. There is no indication that the parent/child relationship is established by a foreign key and an attribute as is recited in Claims 1, 12, and 24. Appellants submit that Jorgenson does not describe how the parent/child relationship is established because Jorgenson does not care how it is established but only cares that it exists and the relationship can be displayed. This is because Jorgensen relates to displaying relationships in a database, not creating them.

Jorgenson also describes displaying child tables if the current table is a parent table. This is described with reference to the cited block 332 of Figure 3B of Jorgensen. The determination of whether the current table has child tables is described with reference to block 330 of Figure 3B of Jorgensen. In particular, Jorgensen states:

> If no constraint is found for the current entity, the process proceeds instead directly to step 330, which depicts a determination of whether the entity is a parent--i.e., whether there exists one or more child tables for the currently selected entity. This determination may be made from the relational database. If at least one child exists, the process proceeds to step 332, which illustrates displaying a list of child tables for the currently selected entity with each name in the list hyperlinked to the respective child table, and then to step 334. (Jorgensen, col. 6, lines 26-35).

Again, there is no discussion whatsoever of how the determination that a child table exists is carried out other than to state that it is established by the database. There is no indication that the parent/child relationship is established by a foreign key and an attribute as is recited in Claims 1, 12, and 24.

Appellants also note that there is no discussion in Jorgensen with respect to using a foreign key and an attribute to provide a multiple but exclusive relationship as recited in Claims 1, 12, and 24. While the Office Action never discusses the multiple but exclusive relationship with reference to Claim 1, there is a discussion of "enforcing the multiple but exclusive relationship between tables in a relation database" on page 4 of the Office Action. In discussing the multiple but exclusive relationship, the Office Action appears to be confused as to the nature of the multiple but exclusive relationship. This relationship is described with reference to Figures 2C through 2D of the present Specification, and is defined as "a multiple but exclusive

relationship is one where entries in a given table may have a one-to-many or a many-to-many

relationship to entries **in exactly one of several other tables**." As is further described in the

present Specification:

> Referring back to Figures **2C** and **2D**, the multiple but exclusive one-to-many
> relationship between table A and tables B_1 and B_2 in **Figure 2C** may be expressed if each
> given record in A may be restricted to only relate to a set of records in one and only one
> of tables B_1 or B_2. Similarly, in **Figure 2D**, the relationship may be multiple but
> exclusive because each given record in Table A may be restricted to relate to exactly one
> set of records in one and only one of tables B_1 or B_2, where the set of records is defined
> by the corresponding relationship table R_1 and R_2. (Specification, p. 8, line 32 to p. 9,
> line 5).

The Office Action cites to Figure 2 of Jorgensen as describing the multiple but exclusive

relationship. (Office Action, p. 4). However, Figure 2 of Jorgensen does not appear to describe

more than is described by Figures 2A and 2B of the present application. As discussed in the

present Specification, Figures 2A and 2B do not describe a multiple but exclusive relationship

but describe the conventional multiple relationships. In particular, the Specification states:

> As is seen from **Figures 2A** and **2B**, in conventional database design for expressing a
> multiple relationship, it is possible to have a record in Table A relating to more than one
> record in more than one table from tables B_1, B_2, B_3, ..., B_m. In other words, a database
> management system (DBMS) may be unable to enforce an exclusive aspect of the one-to-
> many or many-to-many multiple but exclusive relationships. Embodiments of the
> present invention may, however, allow a DBMS to enforce the multiple but exclusive
> relationship utilizing the selective association of foreign keys as is described herein.
> (Specification, p. 9, lines 14).

Thus, while Figure 2 of Jorgensen may describe multiple relationships, there does not appear to

be a description of the exclusive aspect of the one-to-many or many-to-many relationship as is

recited in Claims 1, 12, and 24.

For at least the foregoing reasons, Appellants submit that Claims 1, 12, and 24 are

patentable over the cited reference and that dependent Claims 2 – 11, 13 – 23, and 25 – 35 are

patentable at least by virtue of their depending from an allowable claim. Accordingly,

Appellants respectfully request that the rejection of Claims 1 – 35 be reversed based on the

failure of the Examiner to establish a prima facie case of anticipation under 35 U.S.C. §102 for at

least these reasons.

B. **Independent Claims 36, 40, and 45 are Patentable over Jorgenson**

With regard to independent Claims 36, 40 and 45, these claims were amended in the Amendment of March 15, 2005 to recite that a "type attribute" is associated with records in a first table that identifies ones of a plurality of second tables with which the record is associated. The Final Action does not address this recitation in independent Claims 36, 40, and 45 and Appellants submit that these recitations are not found in Jorgensen. Appellants further submit that recitations regarding enforcing the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table are also not found in Jorgensen for reasons analogous to those discussed above with reference to Claims 1, 12, and 24.

For at least the foregoing reasons, Appellants respectfully submit that independent Claims 36, 40, and 45 are patentable over the cited reference and that dependent Claims 37 – 39, 41 – 44, and 46 - 48 are patentable at least by virtue of their depending from an allowable claim. Accordingly, Appellants respectfully request that the rejection of Claims 36 - 48 be reversed based on the failure of the Examiner to establish a prima facie case of anticipation under 35 U.S.C. §102 for at least these reasons.

C. **Dependent Claims 15, 19, 27, 31, and 43 are Patentable over Jorgenson**

Dependent Claims 15, 19, 27, 31, and 43 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jorgenson. (Final Action page 5). Appellants respectfully submit that dependent Claims 15, 19, 27, 31, and 43 are patentable for at least the reasons described above with respect to the various independent claims from which these claims depend. Appellants further submit that dependent Claims 15, 19, 27, 31, and 43 are separately patentable for at least the reason that these claims recite that the multiple but exclusive relationship is enforced by a database trigger. The Final Action cites to Figure 3C of Jorgensen as disclosing the recitations of these claims. (Final Action, p. 5). However, Figure 3C of Jorgensen merely describes displaying trigger information if a user clicks on an icon indicating that there is trigger information to be displayed. (Jorgensen, Figure 3C). There is no indication in the cited portion of Jorgensen what function the trigger would perform and, in fact, there is not even a use of a trigger but merely the display

of information associated with a trigger. For at least the foregoing reasons, Appellants respectfully submit that dependent Claims 15, 19, 27, 31, and 43 are separately patentable over the cited reference. Accordingly, Appellants respectfully request that the rejection of Claims 15, 19, 27, 31, and 43 be reversed based on the failure of the Examiner to establish a prima facie case of anticipation under 35 U.S.C. §102 for at least these additional reasons.

D. Dependent Claims 16 and 28 are Patentable over Jorgenson

Dependent Claims 16 and 28 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jorgenson. (Final Action page 5). Appellants respectfully submit that dependent Claims 16 and 28 are patentable for at least the reasons described above with respect to the various independent claims from which these claims depend. With respect to dependent Claim 16, the Final Action alleges that Jorgenson uses hyperlinks to access tables. (Final Action, page 5). Appellants submit, however, that the recitations of Claim 16 are not disclosed or suggested by the hyperlinks of Jorgensen. For example, the hyperlinks of Jorgensen are used to display information about tables in a database. They are not used for accessing records in the tables themselves. Thus, Appellants submit that the recitations of Claim 16 regarding accessing the type table to determine a type associated with a record in the relating table based on a value in the record is neither disclosed nor suggested by the hyperlinks of Jorgensen. Claim 28 includes similar recitations. For at least the foregoing reasons, Appellants respectfully submit that dependent Claims 16 and 28 are separately patentable over the cited reference. Accordingly, Appellants respectfully request that the rejection of Claims 16 and 28 be reversed based on the failure of the Examiner to establish a prima facie case of anticipation under 35 U.S.C. §102 for at least these additional reasons.

E. Dependent Claims 17 and 29 are Patentable over Jorgenson

Dependent Claims 17 and 29 stand rejected under 35 U.S.C. §102(b) as being anticipated by Jorgenson. (Final Action pages 4 and 5). Appellants respectfully submit that dependent Claims 17 and 29 are patentable for at least the reasons described above with respect to the various independent claims from which these claims depend. With respect to dependent Claim 17, the Final Action alleges that the recitations of this claim are "default properties of standard

OO SQL processing." (Final Action, p. 4). Appellants are not claiming new properties of SQL but are claiming the use of database techniques to provide new functionality. Based on the logic of the argument in the Final Action no software implemented invention is patentable if the programming language it is written in is known. Appellants submit that merely because the building blocks that are used to create embodiments of the present invention are known, that does not disclose or suggest the specific arrangement of those building blocks as is recited in the claims.

For example, Claim 17 recites:

> 17. (Original) The database system of Claim 12, wherein the relating table comprises a third table, the related tables comprise a plurality of second tables and wherein the third table relates records in a first entity table to records in a corresponding one of the second tables and wherein the means for selectively associating comprises:
> means for defining a foreign key of records of the third table;
> means for defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;
> means for selecting one of the second tables having a type corresponding to a type value associated with a record of the third table; and
> means for identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the third table.
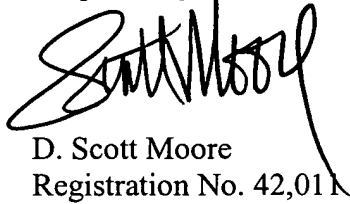
Claim 17 is not merely the recitation of standard SQL processing but is a specific configuration for a database system that includes, for example, a third table that relates records in the first entity table to records in a corresponding one of the second tables. Additional recitations of Claim 17 are not merely default properties of SQL but recite specific configurations of a database and operations performed by the database. As such, Appellants submit that Claim 17 is separately patentable over Jorgensen for at least these additional reasons. Dependent Claim 29 includes similar recitations. For at least the foregoing reasons, Appellants respectfully submit that dependent Claims 17 and 29 are separately patentable over the cited reference. Accordingly, Appellants respectfully request that the rejection of Claims 17 and 29 be reversed based on the failure of the Examiner to establish a prima facie case of anticipation under 35 U.S.C. §102 for at least these additional reasons

II.   Conclusion

In summary, Appellants respectfully submit that, with respect to Claims 1 - 48, the cited reference does not teach all of the recitations of the claims for at least the reasons discussed above. Accordingly, Appellants respectfully request reversal of the rejection of Claims 1 - 48 based on the cited reference.

Respectfully submitted,

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APPENDIX A

1.   (Previously presented)   A computer-implemented method of managing a relational database, comprising:

selectively associating a foreign key associated with a record in a relating table with a specific one of a plurality of related tables based on at least one attribute of the record in the relating table by selectively creating a corresponding association in the relational database so as to provide multiple but exclusive relationships between tables in the relational database.

2.   (Original)   The method of Claim 1, wherein the relating table comprises a first table and the related tables comprise a plurality of second tables, and wherein the step of selectively associating comprises the steps of:

defining a foreign key of records of the first table;

defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

selecting one of the second tables having a type corresponding to a type value associated with a record of the first table; and

identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the first table.

3.   (Original)   The method of Claim 1, wherein the relating table comprises an entity table and the plurality of related tables comprise entity tables such that the foreign key and the at least one attribute provide a one-to-many relationship between the relating entity table and a corresponding one of the related entity tables.

4.   (Original)   The method of Claim 3, wherein the step of selectively associating comprises defining a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables.

5.   (Original)   The method of Claim 3, wherein the step of selectively associating comprises the steps of:

defining a type associated with respective ones of the plurality of related tables in a type table;

accessing the type table to determine a type associated with a record in the relating table based on a value in the record in the relating table which identifies a record in the type table which identifies a type; and

associating the type identified in the type table with the record in the relating table so as to select one of the plurality of related tables which contain records having foreign key associations which point the record in the relating table.

6.   (Original)   The method of Claim 1, wherein the relating table comprises a third table, the related tables comprise a plurality of second tables and wherein the third table relates records in a first entity table to records in a corresponding one of the second tables and wherein the step of selectively associating comprises the steps of:

defining a foreign key of records of the third table;

defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

selecting one of the second tables having a type corresponding to a type value associated with a record of the third table; and

identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the third table.

7.   (Original)   The method of Claim 6, wherein the third table relates records in the first table to records in a corresponding one of the second tables such that the foreign key and type provide a many-to-many relationship between the second entity table and the first entity table utilizing the third relationship table.

8.   (Original)   The method of Claim 7, wherein records in the third table have a type value which identifies one of the plurality of second tables and wherein the step of selecting

one of the second tables having a type corresponding to a type value associated with a record of the third table comprises the steps of:

obtaining the type value of a record of the third table; and

selecting one of the second tables corresponding to the type value from the record of the third table.

9.   (Original)   The method of Claim 8, wherein the step of obtaining the type value comprises joining the first table and the third table such that the type value associated with records in the first table is implicitly specified by the corresponding records in the third table.

10.   (Original)   The method of Claim 7, wherein the step of defining a plurality of types of foreign key associations comprises defining a plurality of types of foreign key associations in a type table; and

wherein the step of selecting one of the second tables comprises accessing the type table to determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

11.   (Original)   The method of Claim 8, wherein the step of defining a plurality of types of foreign key associations comprises defining a plurality of types of foreign key associations in a type table; and

wherein the step of selecting one of the second tables corresponding to the type value from the record of the third table further comprises accessing the type table to determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

12.   (Previously presented)   A database system for providing multiple but exclusive relationships between tables in a relational database, comprising:

a relating table;

a plurality of related tables; and

means for selectively associating a foreign key value of a record in the relating table with a specific one of the plurality of related tables based on at least one attribute of the record containing the foreign key in the relating table so as to provide multiple but exclusive relationships between tables in the relational database.

13.   (Original)   The database system of Claim 12, wherein the relating table comprises a first table and the related tables comprise a plurality of second tables, and wherein the means for selectively associating comprises:

means for defining a foreign key of records of the first table;

means for defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

means for selecting one of the second tables having a type corresponding to a type value associated with a record of the first table; and

identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the first table.

14.   (Original)   The database system of Claim 12, wherein the relating table comprises an entity table and the plurality of related tables comprise entity tables such that the foreign key and the at least one attribute provide a one-to-many relationship between the relating entity table and a corresponding one of the related entity tables.

15.   (Original)   The database system of Claim 14, wherein the means for selectively associating comprises means for defining a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables.

16.   (Original)   The database system of Claim 14, wherein the means for selectively associating comprises:

means for defining a type associated with respective ones of the plurality of related tables in a type table;

means for accessing the type table to determine a type associated with a record in the relating table based on a value in the record in the relating table which identifies a record in the type table which identifies a type; and

means for associating the type identified in the type table with the record in the relating table so as to select one of the plurality of related tables which contain records having foreign key associations which point the record in the relating table.

17.   (Original)   The database system of Claim 12, wherein the relating table comprises a third table, the related tables comprise a plurality of second tables and wherein the third table relates records in a first entity table to records in a corresponding one of the second tables and wherein the means for selectively associating comprises:

means for defining a foreign key of records of the third table;

means for defining a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

means for selecting one of the second tables having a type corresponding to a type value associated with a record of the third table; and

means for identifying a record in the selected second table based on a foreign key value of the foreign key of the record in the third table.

18.   (Original)   The database system of Claim 17, wherein the third table relates records in the first table to records in a corresponding one of the second tables such that the foreign key and type provide a many-to-many relationship between the second entity table and the first entity table utilizing the third relationship table.

19.   (Original)   The database system of Claim 18, wherein the means for selectively associating comprises means for defining a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables.

20. (Original) The database system of Claim 18, wherein records in the third table have a type value which identifies one of the plurality of second tables and wherein the means for selecting one of the second tables having a type corresponding to a type value associated with a record of the third table comprises:

means for obtaining the type value of a record of the third table; and

means for selecting one of the second tables corresponding to the type value from the record of the third table.

21. (Original) The database system of Claim 20, wherein the means for obtaining the type value comprises means for joining the first table and the third table such that the type value associated with records in the first table is implicitly specified by the corresponding records in the third table.

22. (Original) The database system of Claim 20, wherein the means for defining a plurality of types of foreign key associations comprises means for defining a plurality of types of foreign key associations in a type table; and

wherein the means for selecting one of the second tables comprises means for accessing the type table to determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

23. (Original) The database system of Claim 20, wherein the means for defining a plurality of types of foreign key associations comprises means for defining a plurality of types of foreign key associations in a type table; and

wherein the means for selecting one of the second tables corresponding to the type value from the record of the third table further comprises means for accessing the type table to determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

24. (Previously presented) A computer program product for providing multiple but exclusive relationships between tables in a relational database, comprising:

a computer readable medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code configured to selectively associate a foreign key associated with a record in a relating table with a specific one of a plurality of related tables based on at least one attribute of the record in the relating table so as to provide multiple but exclusive relationships between tables in the relational database.

25. (Original) The computer program product of Claim 24, wherein the relating table comprises a first table and the related tables comprise a plurality of second tables, and wherein the computer readable program code configured to selectively associate comprises:

computer readable program code configured to define a foreign key of records of the first table;

computer readable program code configured to define a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

computer readable program code configured to select one of the second tables having a type corresponding to a type value associated with a record of the first table; and

computer readable program code configured to identify a record in the selected second table based on a foreign key value of the foreign key of the record in the first table.

26. (Original) The computer program product of Claim 24, wherein the relating table comprises an entity table and the plurality of related tables comprise entity tables such that the foreign key and the at least one attribute provide a one-to-many relationship between the relating entity table and a corresponding one of the related entity tables.

27. (Original) The computer program product of Claim 26, wherein the computer readable program code configured to selectively associate comprises computer readable program

code configured to define a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables.

28.   (Original)   The computer program product of Claim 26, wherein the computer readable program code configured to selectively associate comprises:

computer readable program code configured to define a type associated with respective ones of the plurality of related tables in a type table;

computer readable program code configured to access the type table to determine a type associated with a record in the relating table based on a value in the record in the relating table which identifies a record in the type table which identifies a type; and

computer readable program code configured to associate the type identified in the type table with the record in the relating table so as to select one of the plurality of related tables which contain records having foreign key associations which point the record in the relating table.

29.   (Original)   The computer program product of Claim 24, wherein the relating table comprises a third table, the related tables comprise a plurality of second tables and wherein the third table relates records in a first entity table to records in a corresponding one of the second tables and wherein the computer readable program code configured to selectively associate comprises:

computer readable program code configured to define a foreign key of records of the third table;

computer readable program code configured to define a plurality of types of foreign key associations, each of the types corresponding to a respective one of the plurality of second tables;

computer readable program code configured to select one of the second tables having a type corresponding to a type value associated with a record of the third table; and

computer readable program code configured to identify a record in the selected second table based on a foreign key value of the foreign key of the record in the third table.

30. (Original) The computer program product of Claim 29, wherein the third table relates records in the first table to records in a corresponding one of the second tables such that the foreign key and type provide a many-to-many relationship between the second entity table and the first entity table utilizing the third relationship table.

31. (Original) The computer program product of Claim 30, wherein the computer readable program code configured to selectively associates comprises computer readable program code that defines a database trigger to enforce relationships between the types of foreign key associations and the corresponding particular one of the plurality of related tables.

32. (Original) The computer program product of Claim 30, wherein records in the third table have a type value which identifies one of the plurality of second tables and wherein the computer readable program code configured to select one of the second tables having a type corresponding to a type value associated with a record of the third table comprises:

computer readable program code configured to obtain the type value of a record of the third table; and

computer readable program code configured to select one of the second tables corresponding to the type value from the record of the third table.

33. (Original) The computer program product of Claim 32, wherein the computer readable program code configured to obtain the type value comprises computer readable program code configured to join the first table and the third table such that the type value associated with records in the first table is implicitly specified by the corresponding records in the third table.

34. (Original) The computer program product of Claim 31, wherein the computer readable program code configured to define a plurality of types of foreign key associations comprises computer readable program code configured to define a plurality of types of foreign key associations in a type table; and

wherein the computer readable program code configured to select one of the second tables comprises computer readable program code configured to access the type table to

determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

35.   (Original)   The computer program product of Claim 32, wherein the computer readable program code configured to define a plurality of types of foreign key associations comprises computer readable program code configured to define a plurality of types of foreign key associations in a type table; and

wherein the computer readable program code configured to select one of the second tables corresponding to the type value from the record of the third table further comprises computer readable program code configured to access the type table to determine a type of foreign key association associated with a record in the third table based on a value in the record in the third table which identifies a record in the type table which identifies a type of foreign key association.

36.   (Previously presented)   A computer-implemented method of enforcing a multiple but exclusive relationship between a first table and a plurality of second tables in a database, comprising:

associating, in the database, a type attribute with records in the first table such that the type attribute of a record in the first table identifies which ones of the plurality of second tables the record is associated with; and

enforcing, in the database, the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table.

37.   (Previously presented)   The method of Claim 36, wherein the step of enforcing the multiple but exclusive relationship comprises the step of assuring that each record in each of the plurality of second tables has an associated foreign key which only points to records in the first table which have a type attribute associated with the corresponding one of the plurality of second tables.

38.   (Previously presented)   The method of Claim 36, wherein the step of enforcing the relationship comprises the step of preventing entry of a record in one of the plurality of second tables which points to a record in the first table having a type-attribute other than a type attribute associated with the one of the plurality of second tables.

39.   (Previously presented)   The method of Claim 36, wherein the type associated with the record in the first table is associated by providing a type table of type attributes and accessing the type table based on attributes of the record in the first table so as to ascertain the type attribute associated with the record.

40.   (Previously presented)   A system for enforcing a multiple but exclusive relationship between a first table and a plurality of second tables, comprising:

means for associating a type attribute with records in the first table such that the type attribute of a record in the first table identifies which ones of the plurality of second tables the record is associated with; and

means for enforcing the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table.

41.   (Previously presented)   The system of Claim 40, wherein the means for enforcing the multiple but exclusive relationship comprises means for assuring that each record in each of the plurality of second tables has an associated foreign key which only points to records in the first table which have a type attribute associated with the corresponding one of the plurality of second tables.

42.   (Previously presented)   The system of Claim 40, wherein the means for enforcing the multiple but exclusive relationship comprises means for preventing entry of a record in one of the plurality of second tables which points to a record in the first table having a type attribute other than a type attribute associated with the one of the plurality of second tables.

43. (Original) The system of Claim 40, wherein the means for enforcing the multiple but exclusive relationship comprises means for defining a database trigger which enforces the multiple but exclusive relationship.

44. (Previously presented) The system of Claim 40, wherein the type attribute associated with the record in the first table is associated by providing a type table of type attributes and accessing the type table based on attributes of the record in the first table so as to ascertain the type attribute associated with the record.

45. (Previously presented) A computer program product for enforcing a multiple but exclusive relationship between a first table and a plurality of second tables, comprising:

a computer readable storage medium having computer readable program code embodied therein, the computer readable program code comprising:

computer readable program code configured to associate a type attribute with records in the first table such that the type attribute of a record in the first table identifies which ones of the plurality of second tables the record is associated with; and

computer readable program code configured to enforce the multiple but exclusive relationship between records in the second tables and the first table based on the type attribute associated with a record in the first table.

46. (Previously presented) The computer program product of Claim 45, wherein the computer readable program code configured to enforce the multiple but exclusive relationship comprises computer readable program code configured to assure that each record in each of the plurality of second tables has an associated foreign key which only points to records in the first table which have a type attribute associated with the corresponding one of the plurality of second tables.

47. (Previously presented) The computer program product of Claim 45, wherein the computer readable program code configured to enforce the multiple but exclusive

relationship comprises computer readable program code configured to prevent entry of a record in one of the plurality of second tables which points to a record in the first table having a type attribute other than a type attribute associated with the one of the plurality of second tables.

48. (Previously presented) The computer program product of Claim 45, wherein the type attribute associated with the record in the first table is associated by providing a type table of type attributes and accessing the type table based on attributes of the record in the first table so as to ascertain the type attribute associated with the record.

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APPENDIX B – EVIDENCE APPENDIX

None

APPENDIX C – RELATED PROCEEDINGS APPENDIX

None.